

Antenna Datasheet

Product OC: YFTA009E3AM

Version: 1.1

Date: 2024-11-19

Status: Released

Product Name: Passive L-Band & GNSS L1 & Iridium Antenna

Key Features:

Frequency Band: GNSS L1: 1559–1606 MHz

Iridium: 1616–1626.5 MHz

L-Band: TX: 1626.5–1660.5 MHz, 1668–1675 MHz

RX: 1518–1559 MHz

Peak Gain: 5.65 dBi (Max)

RoHS and REACH Compliant

Overview

This Quectel satellite communication antenna adopts a diversity of forms to guarantee the most suitable polarization type. Quectel's satellite communication antenna products support L band to meet various requirements of customers' products. Such antenna supports different installation or connection methods such as pin mount, surface mount, magnetic mount, internal cable, and external IPEX. Customized connector type and cable length are provided according to requirements.

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1 Specification

Test Condition: Free Space

1.1. Electrical

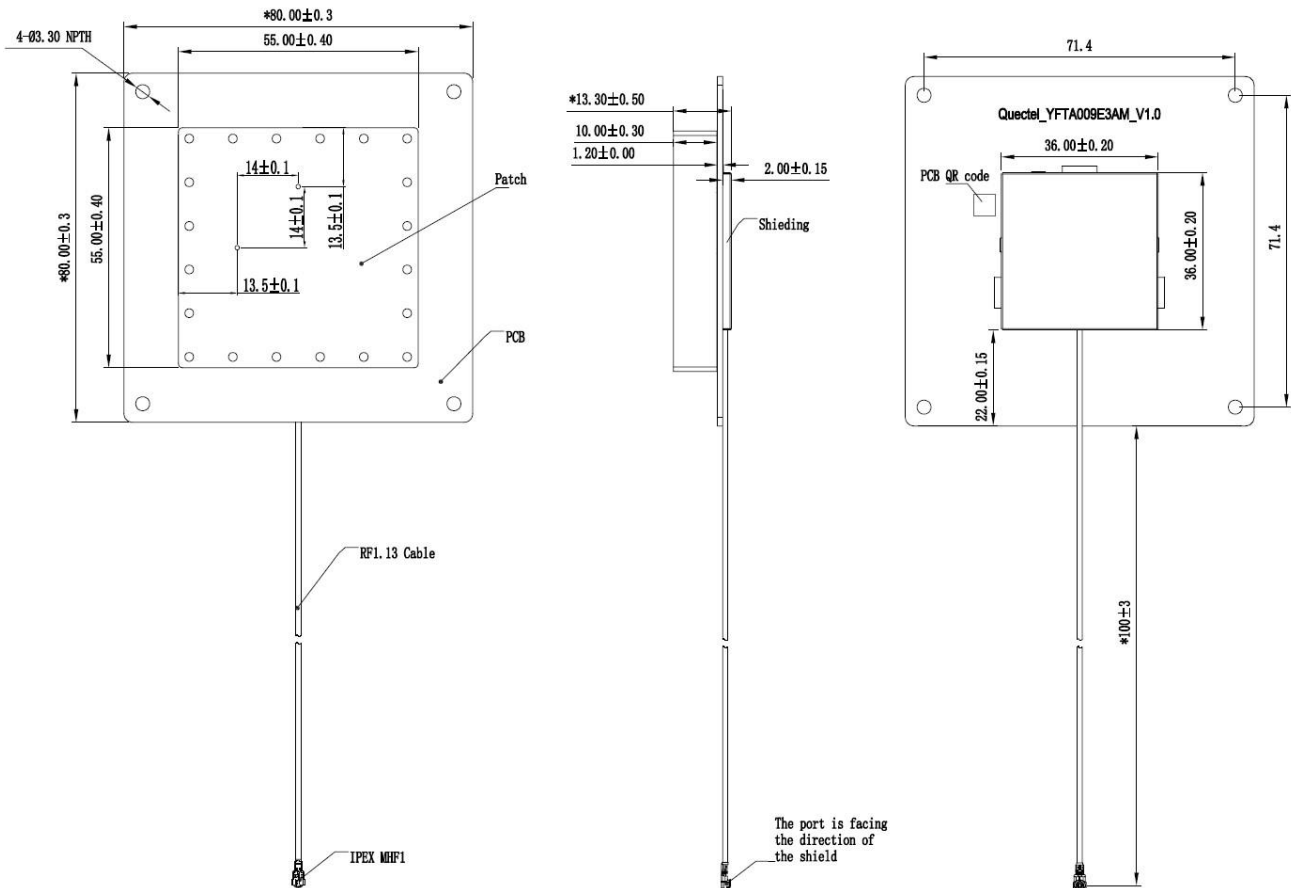
Electrical		
Frequency Range	L-Band	TX: 1626.5–1660.5 MHz, 1668–1675 MHz RX: 1518–1559 MHz
	GNSS	1559–1606 MHz
	Iridium	1616–1626.5 MHz
Impedance		50 Ω
Polarization		RHCP
Radiation Pattern		Directional

Band Frequency (MHz)	L-Band TX					L-Band RX				GPS L1 GALILEO E1 BDS B1C QZSS L1	GLONASS G1
	1626	1645	1661	1668	1675	1518	1525	1543	1559	1575	1600
VSWR	1.3	1.4	1.5	1.5	1.6	1.10	1.10	1.12	1.13	1.18	1.26
Return Loss (dB)	-17	-16	-14	-14	-13	-26	-26	-25	-24	-22	-19
Efficiency (%)	87.3	91.1	88.3	87.3	83.9	59.5	62.9	71.2	75.5	75.3	79.2
Peak Gain (dBic)	5.31	5.54	5.64	5.65	5.5	3.87	4.04	4.35	4.65	4.94	5.3
Axial Ratio (dB)	2.38	2.33	2.51	2.58	2.65	1.41	1.44	1.54	1.66	1.8	2.05

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	80 mm × 80 mm × 13.3 mm
Casing Material & Color	PCBA + Ceramic + RF Cable
Cable Type & Color & Length	Φ 1.13 & Black & 100 mm
Connector Type	IPEX MHF 1
Mounting Type	Screw
Weight	Typ. 56.1 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS & REACH Compliant	Yes

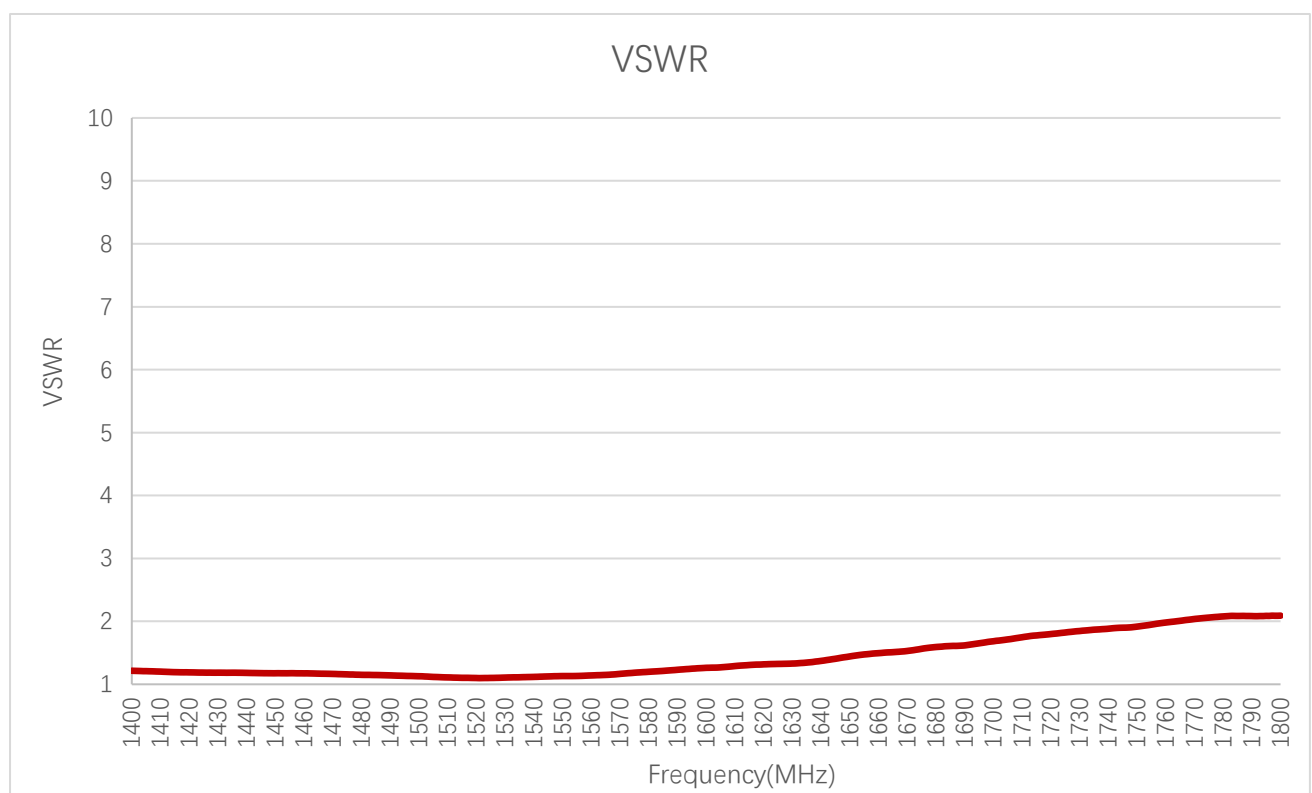
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

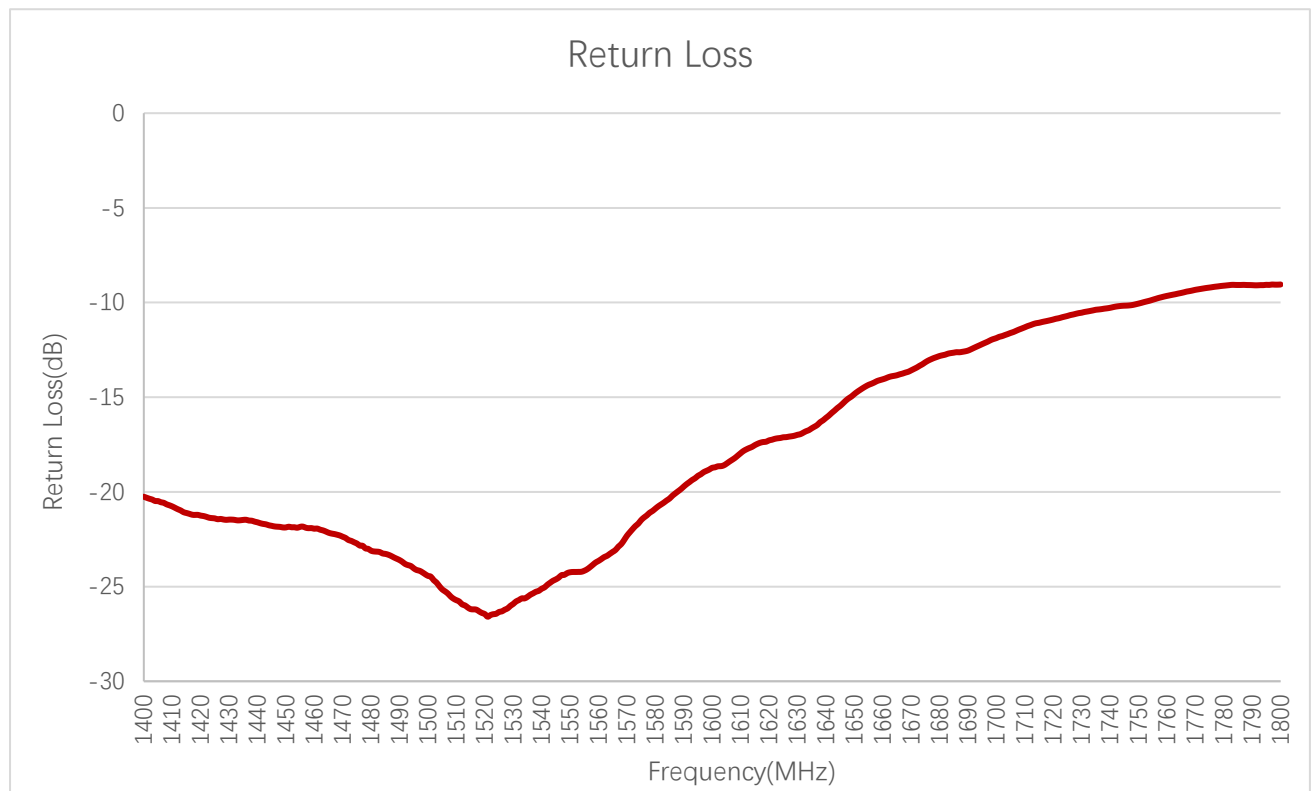
3.1.1. VSWR



VSWR

Frequency (MHz)	1518	1525	1543	1559	1575	1600	1626	1645	1661	1668	1675
VSWR	1.10	1.10	1.12	1.13	1.18	1.26	1.3	1.4	1.5	1.5	1.6

3.1.2. Return Loss

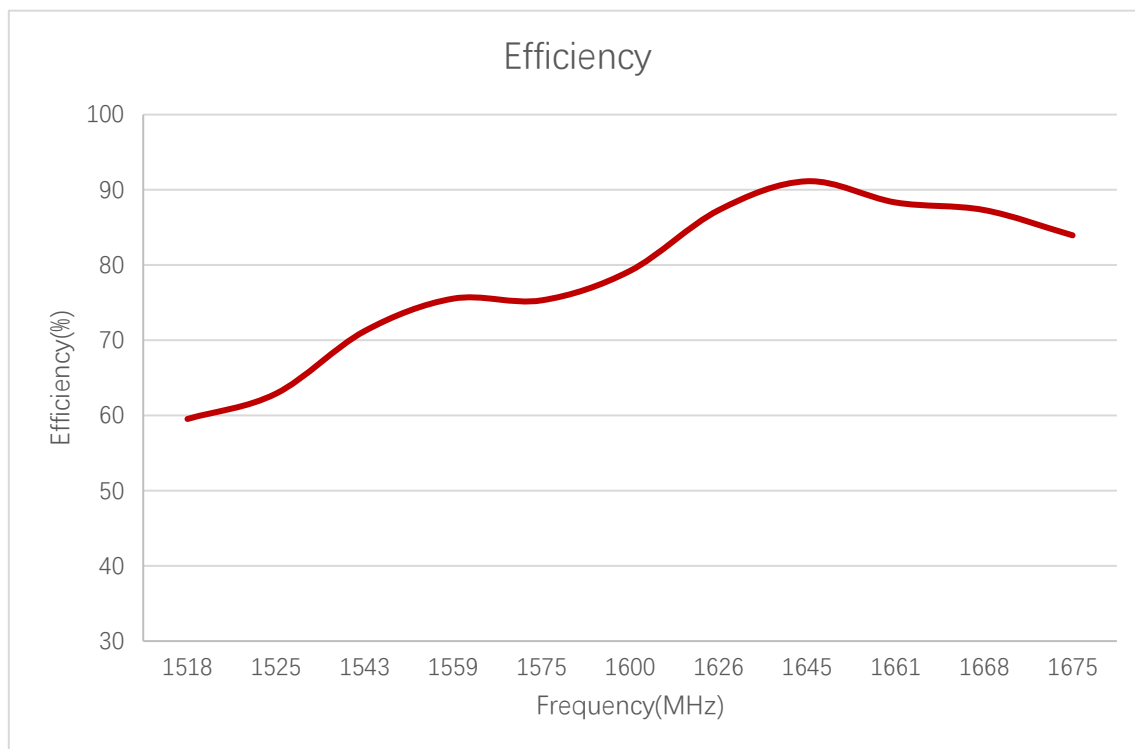


Return Loss (dB)

Frequency (MHz)	1518	1525	1543	1559	1575	1600	1626	1645	1661	1668	1675
Return Loss (dB)	-26	-26	-25	-24	-22	-19	-17	-16	-14	-14	-13

3.2. Radiation Performance Test

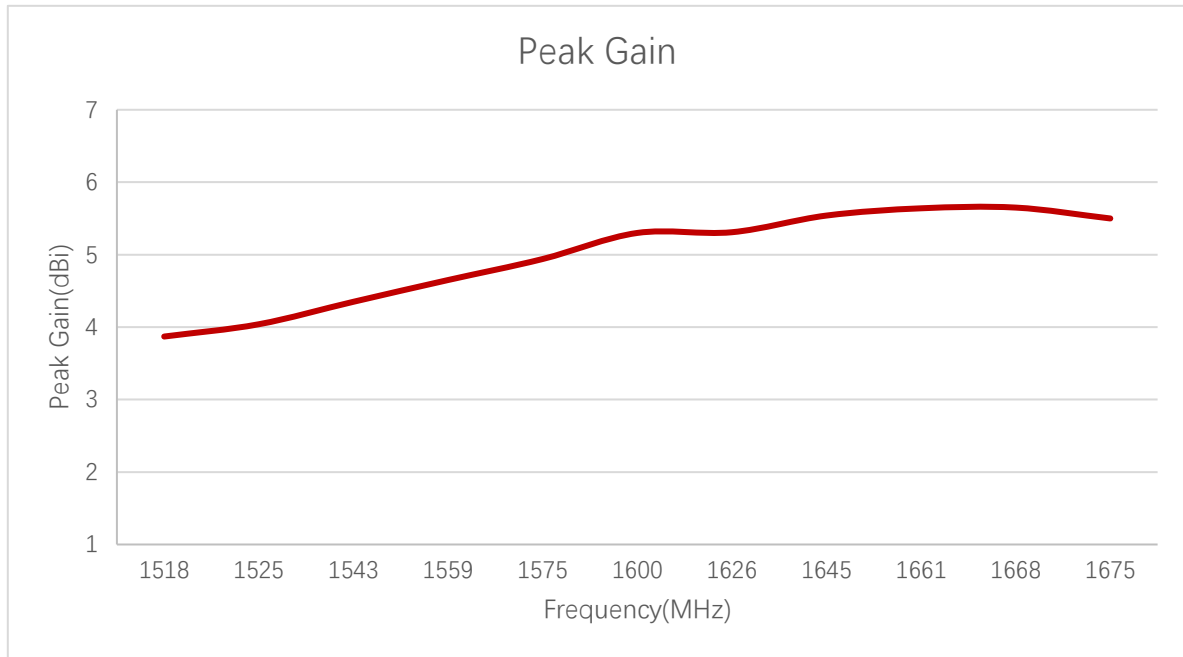
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1518	1525	1543	1559	1575	1600	1626	1645	1661	1668	1675
Efficiency (%)	59.5	62.9	71.2	75.5	75.3	79.2	87.3	91.1	88.3	87.3	83.9

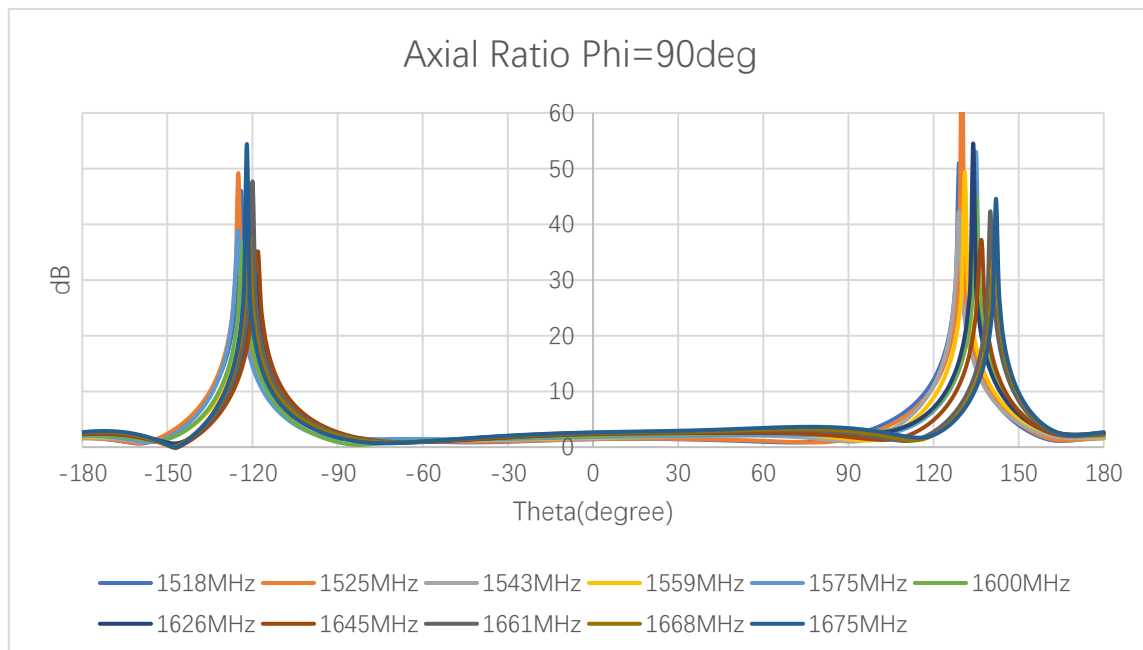
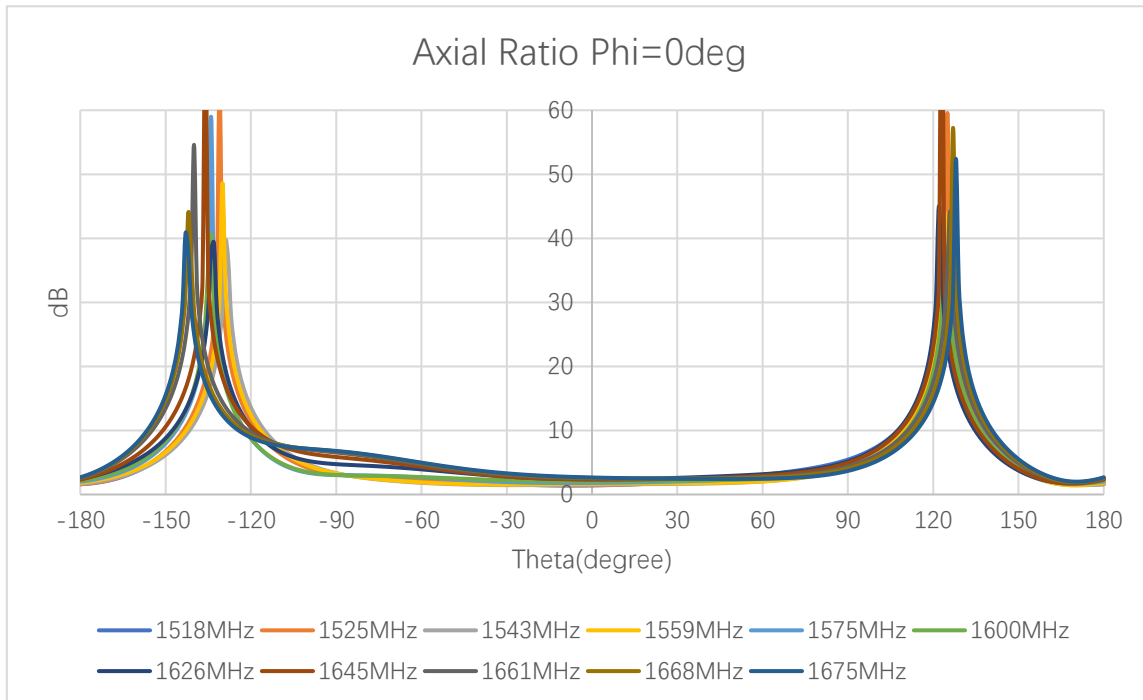
3.2.2. Peak Gain



Peak Gain (dBi)

Frequency (MHz)	1518	1525	1543	1559	1575	1600	1626	1645	1661	1668	1675
Peak Gain (dBi)	3.87	4.04	4.35	4.65	4.94	5.3	5.31	5.54	5.64	5.65	5.5

3.2.3. Axial Ratio

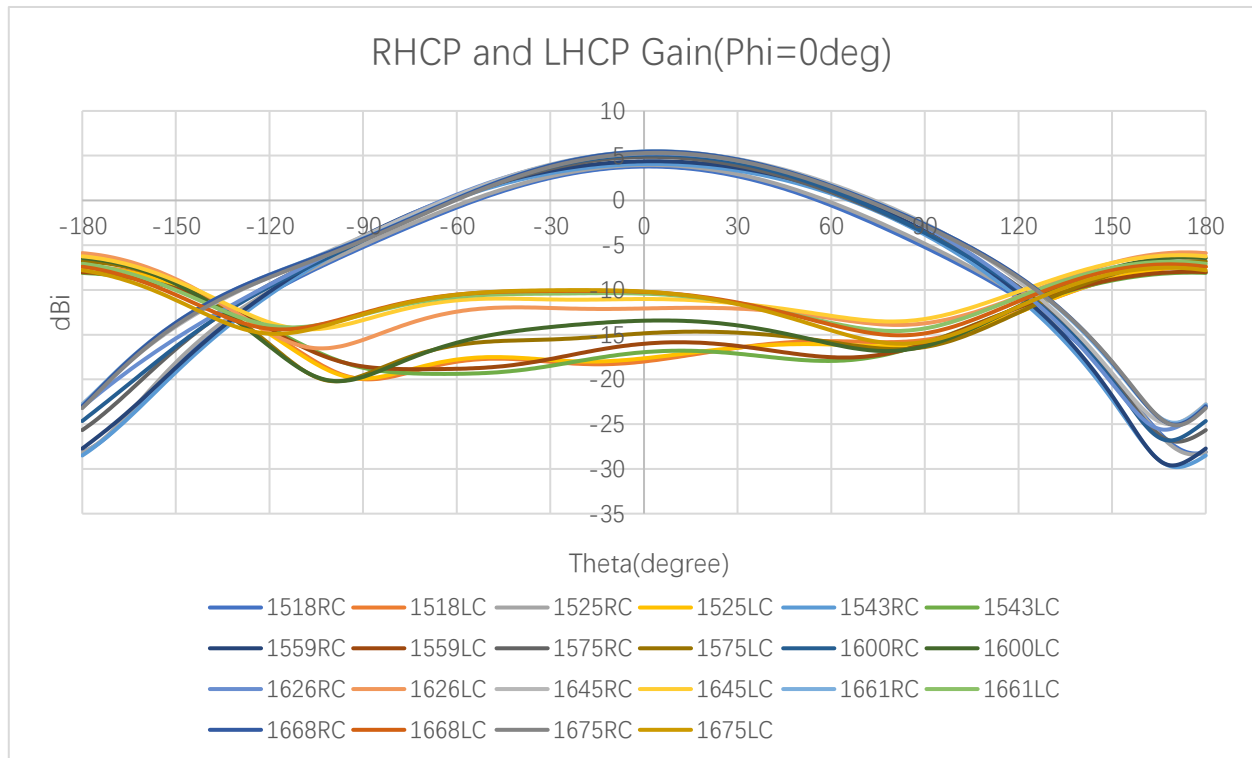


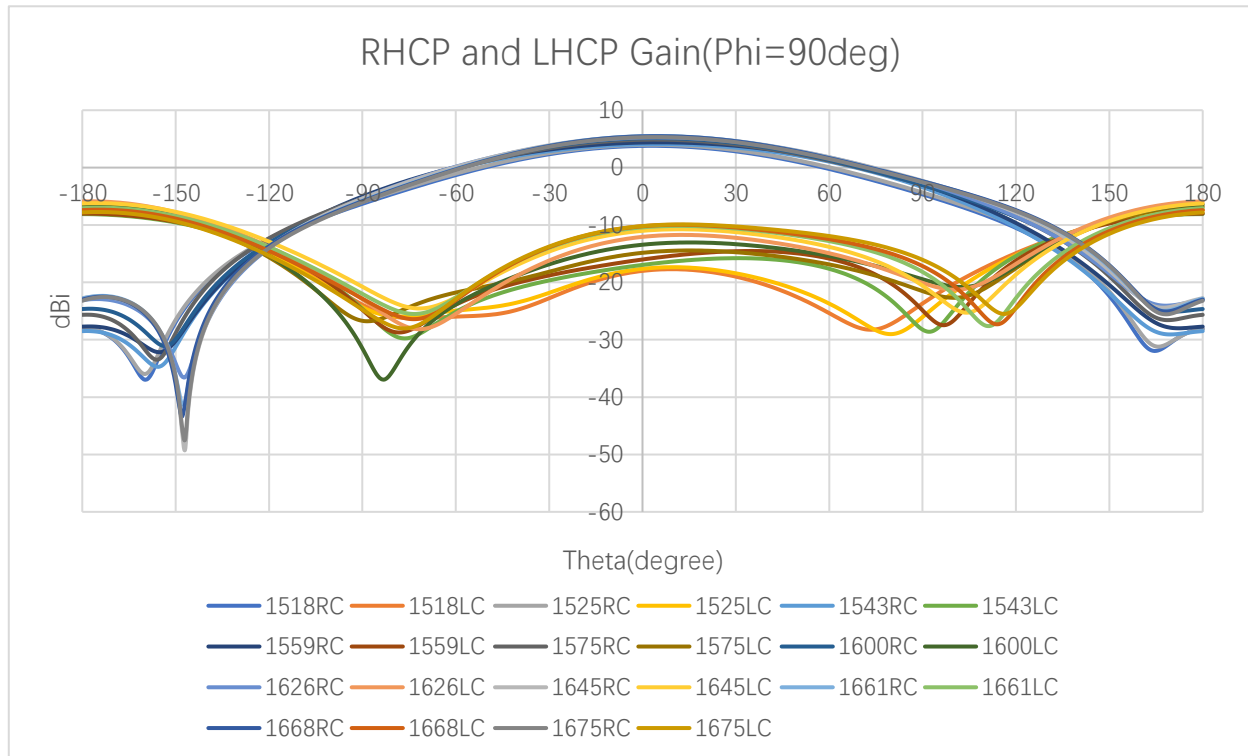
Axial Ratio (dB)

Frequency (MHz)		1518	1525	1543	1559	1575	1600	1626	1645	1661	1668	1675
Axial Ratio (dB)	Phi= 0 (deg)											
	Theta = 0 (deg)	1.41	1.44	1.54	1.66	1.80	2.05	2.38	2.33	2.51	2.58	2.65

Phi = 90 (deg)												
Theta = 0 (deg)	1.41	1.44	1.54	1.66	1.80	2.05	2.38	2.33	2.51	2.58	2.65	

3.2.4. 2D RHCP and LHCP Gain



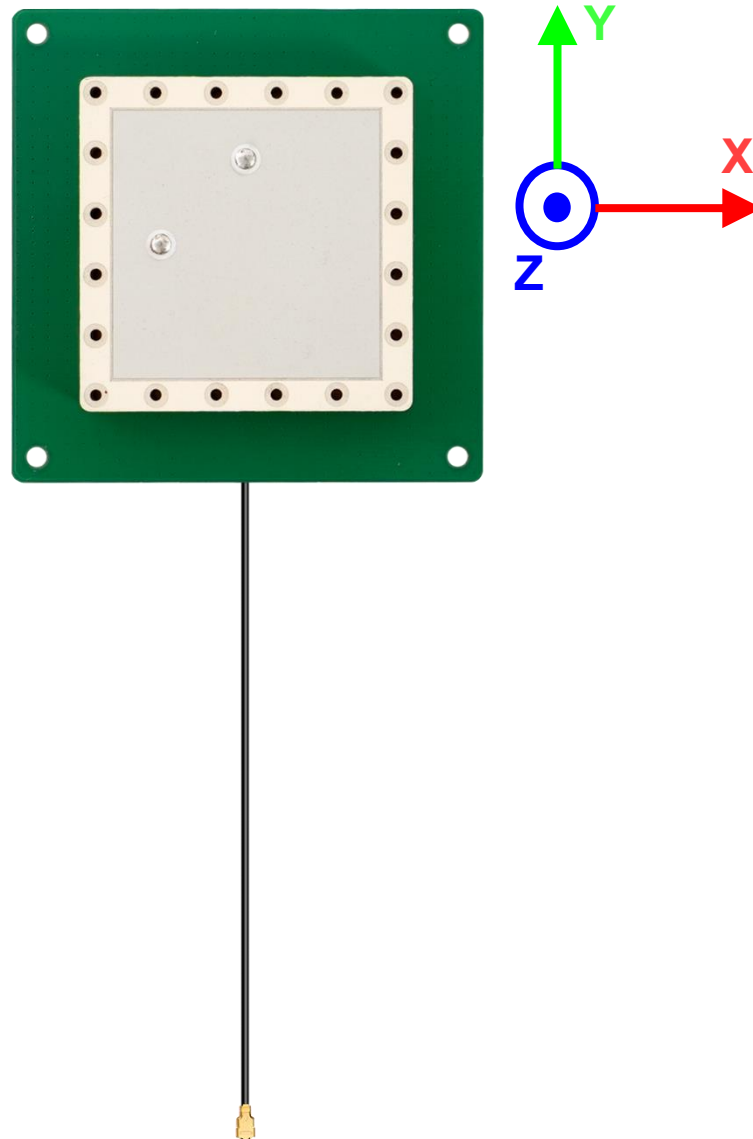


2D RHCP and LHCP Gain (dBi)

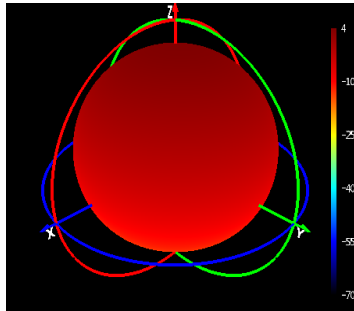
Frequency (MHz)		1518	1525	1543	1559	1575	1600	1626	1645	1661	1668	1675
RHCP Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	3.78	3.96	4.07	4.37	4.86	5.12	5.24	5.44	5.47	5.44	5.29
	Phi = 90 (deg) Theta = 0 (deg)	3.78	3.96	4.07	4.37	4.86	5.12	5.24	5.44	5.47	5.44	5.29
LHCP Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	-18	-17.6	-16.9	-16	-14.8	-13.4	-12	-11	-10.4	-10.2	-10.1
	Phi = 90 (deg) Theta = 0 (deg)	-18	-17.6	-16.9	-16	-14.8	-13.4	-12	-11	-10.4	-10.2	-10.1

3.2.5. 3D & 2D Radiation Pattern

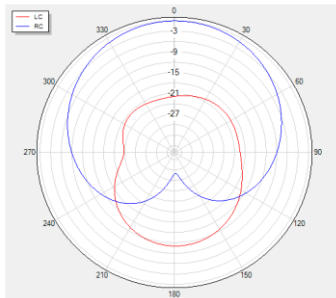
- Test Condition: Free Space
- Test Chamber: SH-SY-16M



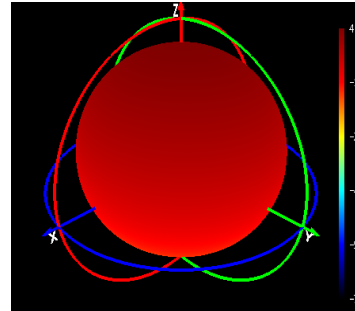
1518 MHz



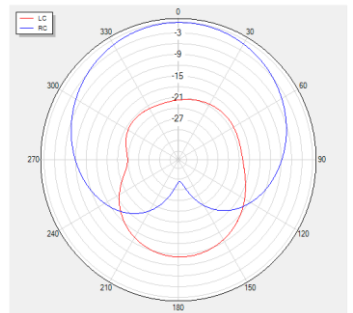
Phi=0 freq=1518MHz



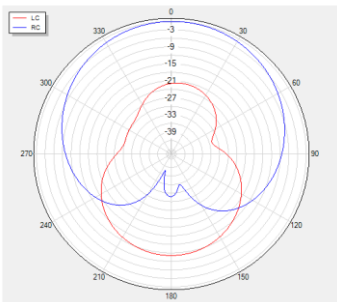
1525 MHz



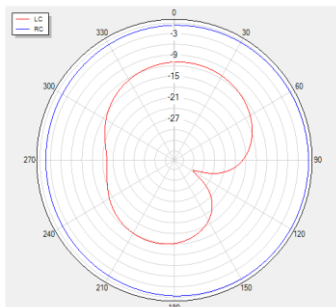
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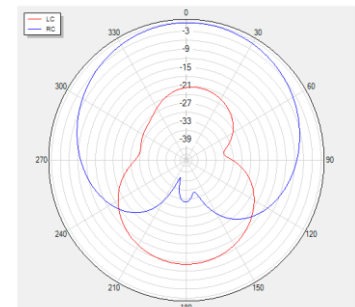
Phi=90 freq=1518MHz



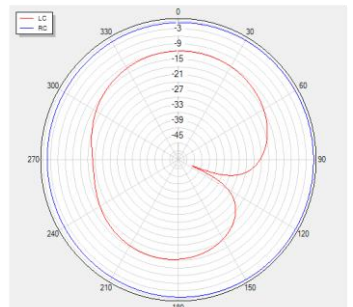
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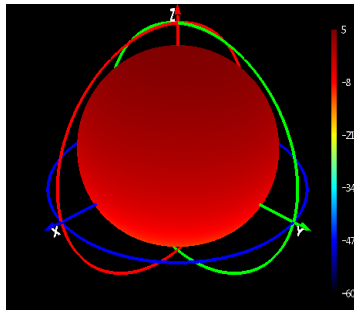
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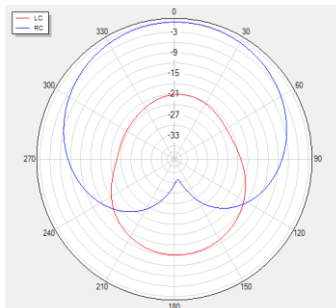
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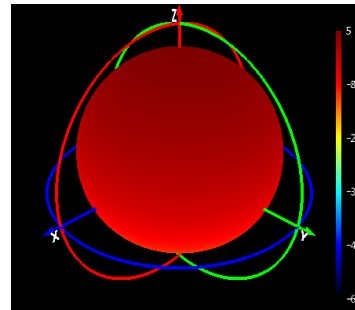
1543 MHz



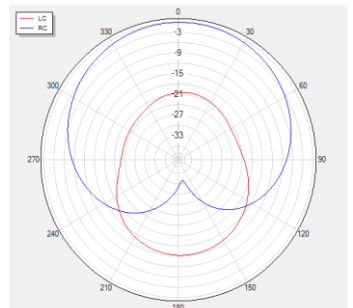
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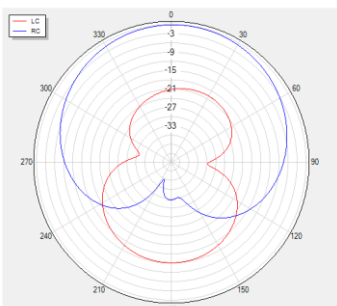
1559 MHz



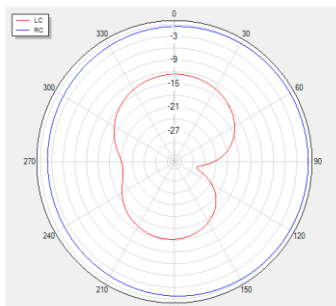
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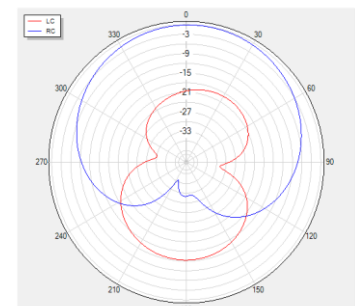
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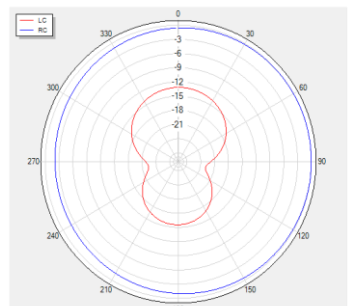
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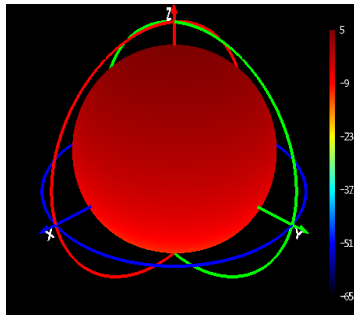
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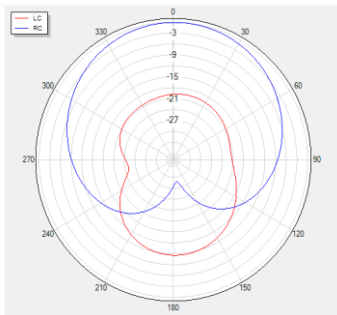
Theta=90 freq=1559MHz



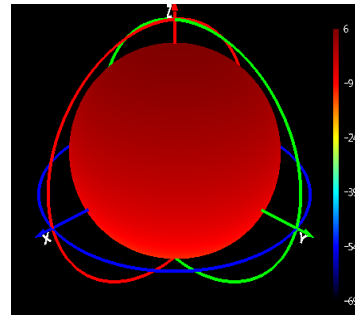
1575 MHz



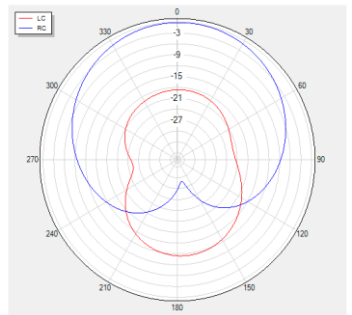
Phi=0 freq=1575MHz



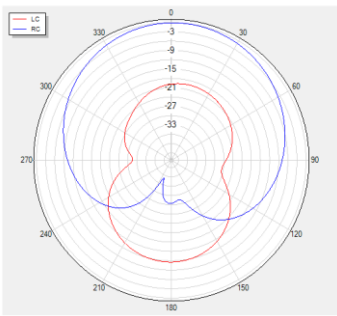
1600 MHz



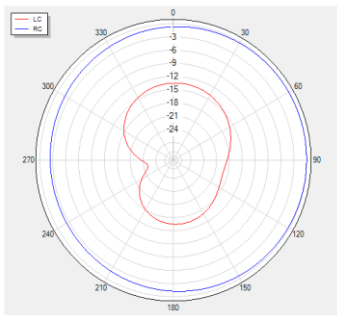
Phi=0 freq=1600MHz



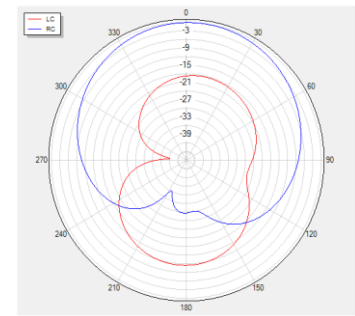
Phi=90 freq=1575MHz



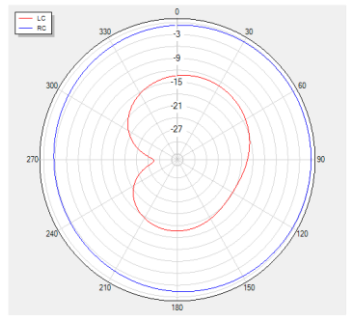
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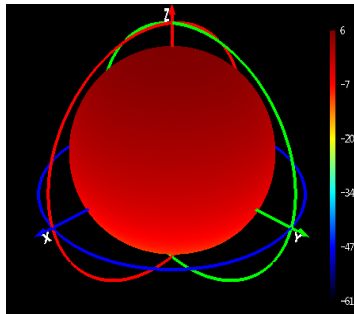
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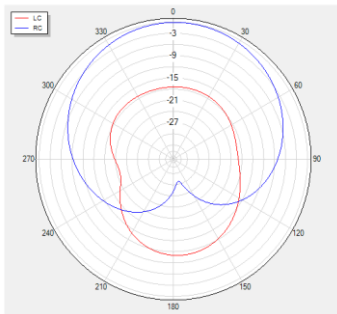
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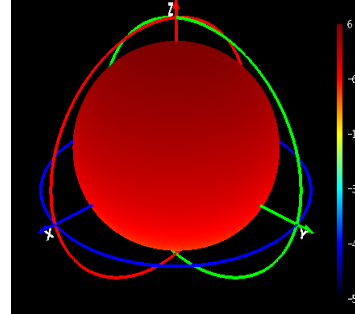
1626 MHz



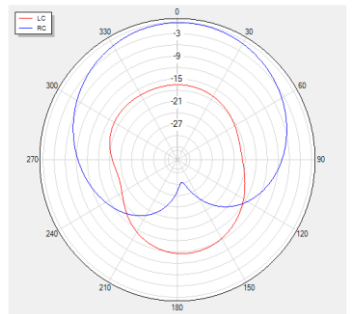
Phi=0 freq=1626MHz



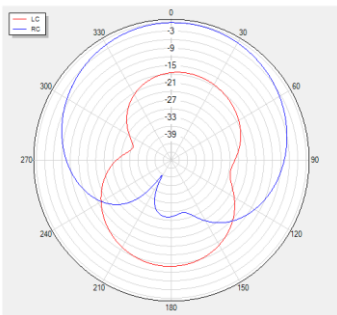
1645 MHz



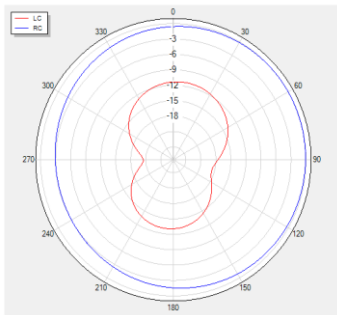
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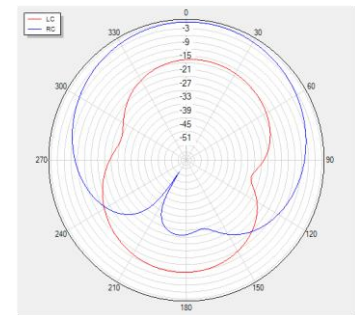
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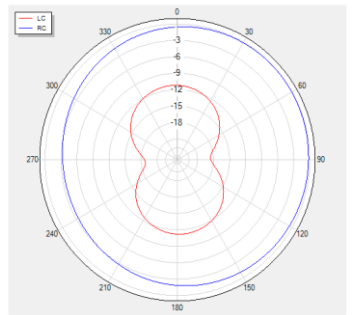
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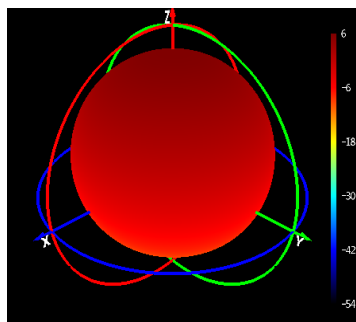
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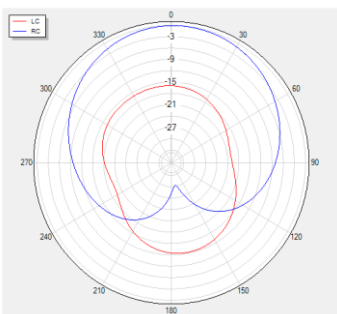
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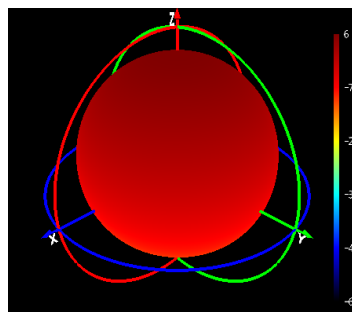
1661 MHz



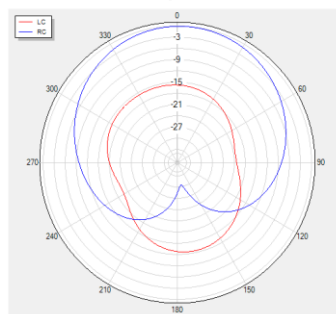
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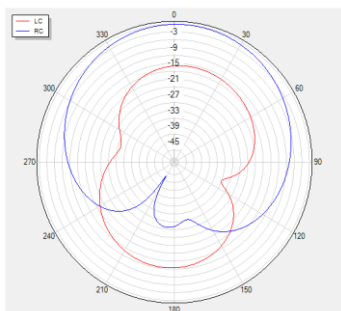
1668 MHz



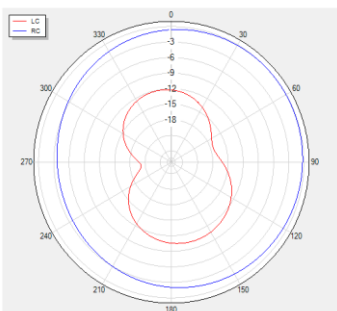
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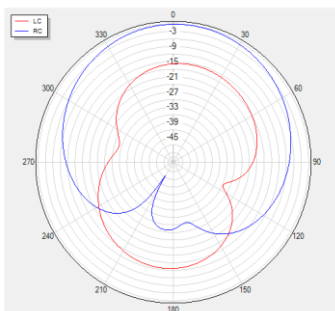
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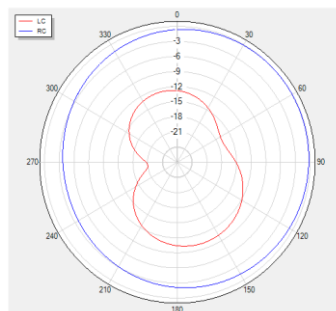
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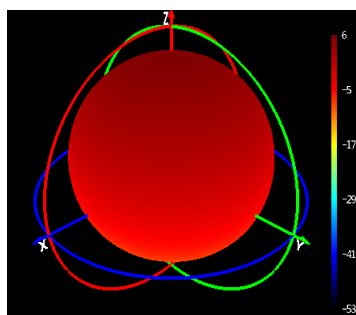
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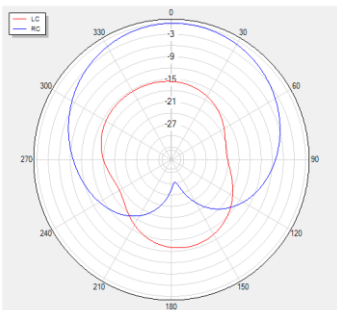
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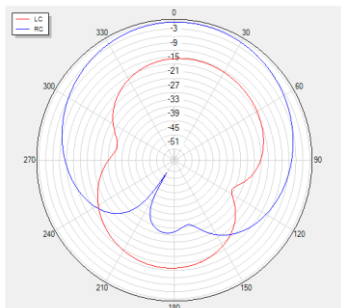
1675 MHz



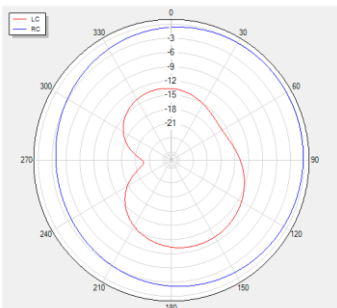
Phi=0 freq=1675MHz



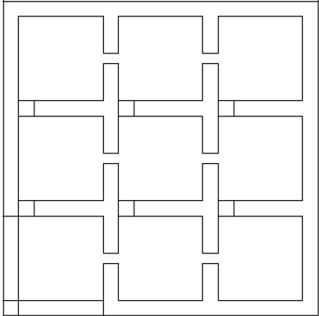
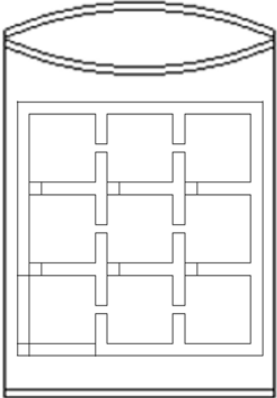
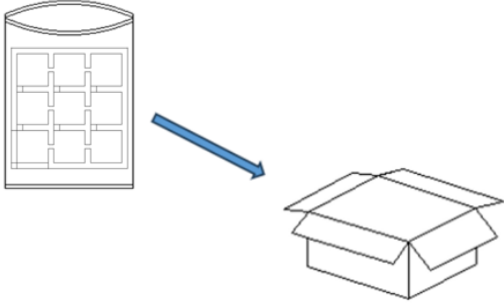
Phi=90 freq=1675MHz

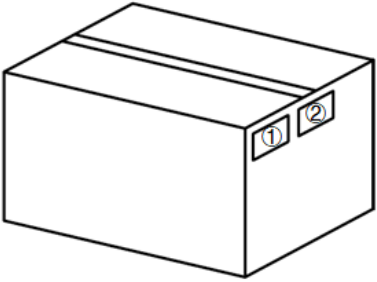
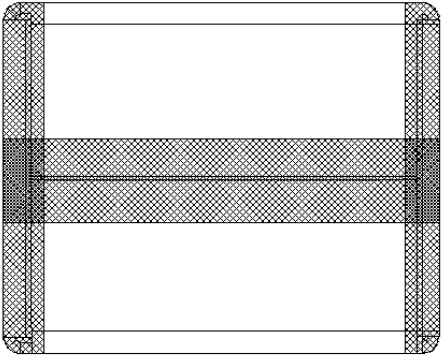


Theta=90 freq=1675MHz



4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		(9 PCS Antennas / Pearl Cotton Tray)
2		The pearl cotton tray is vacuumed in a vacuum bag.
3		(4 Pearl Cotton Trays / Carton Box) (36 PCS Antennas / Carton Box) <u>Carton Size:</u> <u>L × W × H = 340 × 340 × 185 mm</u>

4		Position for Attaching Labels ① Carton Label ② Quality Label
5		Sealing Cartons H-shaped sealing cartons

Contact Us

At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:

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Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

Tel: +86 21 5108 6236

Email: info@quectel.com

Or our local offices. For more information, please visit:

<http://www.quectel.com/support/sales.htm>.

For technical support, or to report documentation errors, please visit:

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Or email us at: support@quectel.com.

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Revision History

Version	Date	Author	Note
-	2024-04-28	Junsen LI/ Mike GUO/ David LIU/ Rainey LIAO	Creation of the document
1.0	2024-04-28	Junsen LI/ Mike GUO/ David LIU/ Rainey LIAO	Preliminary document
1.1	2024-11-19	Mike GUO	Deleted adhesive mounting type of antenna (Chapter 1.2).



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